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APPEAL BRIEF TRANSMITTAL & EXTENSION REQUEST		Docket Number: **10191/3387**	Conf. No. **8950**
Application Number **10/681,994**	Filing Date **October 8, 2003**	Examiner **Thu V. NGUYEN**	Art Unit **3661**
Invention Title **METHOD AND DEVICE FOR ASCERTAINING THE CENTER-OF-GRAVITY HEIGHT OF A VEHICLE**		Inventor **Armin VERHAGEN et al.**	

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Date: September 29, 2005 Reg. No. 36,197

Signature:
Jong H. Lee

10/04/2005 SHASSEN1 00000013 110600 10681994
02 FC:1252 450.00 DA

Further to the Notice of Appeal dated May 24, 2005, 2005 (filed at the PTO on May 31, 2005) for the above-referenced application, enclosed are three copies of an Appeal Brief. Accompanying the Appeal Brief is the Appendix to the Appeal Brief. A two-month extension of time for filing the Appeal Brief is requested. The extended reply period expires on September 30, 2005.

The Commissioner is hereby authorized to charge payment of the 37 C.F.R. § 41.20(b)(2) appeal brief filing fee of **$500.00**, as well as a two-month extension fee of **$450**, and any additional fees associated with this communication, to the deposit account of **Kenyon & Kenyon**, deposit account number **11-0600**.

KENYON & KENYON

(R. No. 36,197)

Dated: September 29, 2005

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[10191/3387]

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BOARD OF PATENT APPEALS AND INTERFERENCES

Applicants : Armin VERHAGEN et al.
U.S. Serial No. : 10/681,994
Filed : October 8, 2003
For : METHOD AND DEVICE FOR ASCERTAINING THE CENTER-OF-GRAVITY HEIGHT OF A VEHICLE
Art Unit : 3661
Examiner : Thu V. NGUYEN
Conf. No. : 8950

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Date: September 29, 2005 Reg. No. 36,197

Signature:
Jong H. Lee

10/04/2005 SHASSEN1 00000013 110600 10681994
01 FC:1402 500.00 DA

APPELLANTS' APPEAL BRIEF UNDER 37 C.F.R. § 41.37

SIR:

Applicants filed a Notice of Appeal dated May 24, 2005, appealing from the Final Office Action dated February 28, 2005, in which claims 1-8, 10 and 11 of the above-identified application were finally rejected. This Brief is submitted by Applicants in support of their appeal.

I. REAL PARTY IN INTEREST

The real party in interest in the present appeal is Robert Bosch GmbH of Stuttgart, Germany. Robert Bosch Gmbh is the assignee of the entire right, title, and interest in the present application.

II. RELATED APPEALS AND INTERFERENCES

No appeal or interference which will directly affect, or be directly affected by, or have a bearing on the Board's decision in the pending appeal is known to exist to the undersigned attorney or is believed by the undersigned attorney to be known to exist to Applicants.

III. STATUS OF CLAIMS

Claims 1-11 are pending in this application. Claim 9 has been allowed. Claims 1-8 and 10-11 stand rejected and are under consideration in this Appeal.

IV. STATUS OF AMENDMENTS

A Rule 116 Amendment was submitted on April 20, 2005 in response to the final Office Action mailed on February 28, 2005. In the Rule 116 Amendment, claim 9 containing allowable subject matter was amended to be in independent form. In the Advisory Action mailed on May 5, 2005, the Examiner indicated that the Rule 116 Amendment would be entered and claim 9 is allowed.

V. SUMMARY OF THE INVENTION

The present invention provides a method for ascertaining the center-of-gravity height of a motor vehicle, in which the center-of-gravity height is ascertained only in predefined driving conditions, and the change in the roll rate per unit of time is used in the ascertainment of the predefined driving conditions. (Specification, p. 1, l. 11-24). The center-of-gravity height is ascertained as a function of a variable representing the rolling motion of the vehicle about its roll axis oriented in the vehicle longitudinal direction, and as a function of a variable representing a lateral acceleration of the vehicle. (P. 1, l. 13-18).

The variable representing the rolling motion of the vehicle about its roll axis may be the roll rate, i.e., the change in the roll angle per unit of time, which may be ascertained using a roll-rate sensor, e.g., a yaw-rate sensor. (P. 2, l. 1-5). The variable representing the rolling motion may also be the roll angle, which may be obtained from the roll rate by an integration over time. (P. 2, l. 7-9).

In an example of the present invention, the center-of-gravity height is only ascertained in those driving conditions in which the amount of the change in the roll rate per unit of time ($d^2(\_)/dt^2$) is less than a specified factor multiplied by the amount of the variable representing the lateral acceleration, i.e.,

$$|d^2(f)/dt^2| < Factor^* |ayS|. \quad (A)$$ (P. 3, l. 7-12).

In a further example of the present invention, it is further ascertained whether the road surface has a gradient in the vehicle transverse direction, and the center-of-gravity height is only ascertained if a roadway is not inclined or is only negligibly inclined in the vehicle transverse direction. (P. 2, l. 14-18).

In another example of the present invention, the product of the mass of the payload and the center-of-gravity height of the payload is ascertained, and this product is utilized in the ascertainment of the center-of-gravity height. (P. 2, l. 17-19). In addition, the estimated mass of the vehicle may be used in the ascertainment of the center-of-gravity height. (P. 3, l. 30-31).

The physical quantities of a vehicle involved in the present invention are illustrated in Figure 1. These quantities include:

f = roll angle,
mR = mass of the vehicle body
h = distance between the point of rotation of the body and the center of gravity
g = gravitational acceleration
mR*g = weight force of the body acting in the center of gravity
x = angle of gradient of the roadway

KR = spring constant of the vehicle suspension
cR = damping constant of the vehicle damping
ay = lateral acceleration acting on the vehicle in the rotated y-z coordinate system
100 = vehicle body
101 = center of gravity of the body (P. 5, l. 22 – p. 6, l. 2).

The general motion equation belonging to roll angle f is represented by:

$$(Ixx + mR^*h^2)^* \, d^2(f)/dt^2 = mR^*h^*ay - cR^*df/dt - KR^*f + mR^*g^*h^*\sin(c+f) \qquad (1)$$

(P. 6, l. 4-7).

Ixx is the moment of inertia of suspended mass mR about its center of gravity. (P. 6, l. 10-11).

On a level roadway, the lateral-acceleration sensor measures variable ayS:

$$ayS = ay^*\cos(\underline{f}) + g^*\sin(f) \approx ay + g^* \sin(f) \qquad (2)$$

In this context, ay is the lateral acceleration which is measured when the body is not inclined (i.e. no presence of a rolling motion). (P. 6, l. 24-29).

Figure 2 shows in which driving conditions the center-of-gravity height is ascertained. In Figure 2, block 200 contains a roll-rate sensor (corresponding to the "first sensor means" of claim 11) for determining roll rate df/dt; block 202 contains a lateral-acceleration sensor (corresponding to the "second sensor means" of claim 11) for determining lateral acceleration ayS. (P. 11, l. 25-26). The output signals of block 200 are supplied to a differentiation block 201 which ascertains roll acceleration $d^2(f)/dt^2$. (P. 11, l. 27-28). The output signals of blocks 201 and 202 are supplied to a comparison block 204, which checks whether a quasi-static driving situation exists, for example, by using the inequality relationship (A) noted previously. (P. 11, l. 28-31).

The output signal of block 200 is also supplied to a comparison block 205, which checks whether the amount of the roll velocity is sufficiently small, that is, $|df/dt| < \varepsilon$, where ε is a specifiable threshold value. (P. 12, l. 1-3).

The sensor system of an ESP system is contained in block 203, i.e., wheel-speed sensors, a steering-angle sensor, one or more pressure sensors in the brake circuit, a yaw-rate sensor, as well as a lateral-acceleration sensor. (P. 12, l. 5-7). The lateral-acceleration sensor may be the same sensor as in block 202. (P. 12, l. 7-8).

In block 203, it is checked whether a sufficiently level roadway (crossfall angle x = 0) exists, and whether the vehicle is in a stable driving condition from the standpoint of driving dynamics. (P. 12, l. 10-12).

The output signals of the three blocks 204, 205 and 203 are supplied to an AND gate 206 (corresponding to the "ascertainment means" of claim 11), which gate enables the ascertainment of the center-of-gravity height when the following three conditions are met:

1. The presence of a quasi-static driving situation was determined in block 204;

2. A sufficiently small amount value for the roll rate was determined in block 205; and

3. A roadway which is not inclined or is inclined only insignificantly in the cross direction, as well as a stable driving condition were determined in block 203. (P. 12, l. 14-22).

If at least one of the three conditions is not met, then the ascertainment method begins anew; however, if all three authorization conditions are met, then the height of the center of gravity is determined in block 207, and the output signals of block 207 are routed to block 208 which is, e.g., actuator means for carrying out driver-independent braking interventions or engine-torque interventions; parameterization means for parameterization of a vehicle-dynamics-control system (e.g. ESP) as a function of the ascertained center-of-gravity height; or information means, by which the driver is informed about the instantaneously ascertained center-of-gravity height. (P. 12, l. 24 – p. 13, l. 2).

Figure 3 shows the sequence for ascertaining the center-of-gravity height, which sequence is carried out in block 207 of Figure 2. After starting in block 300 of Fig. 3, variables ayS, df/dt and f are subsequently ascertained in block 301. (P. 13, l. 10-11). In block 302, it is checked whether a quasi-static driving condition exists. (P. 13, l. 11-12). If no quasi-static driving condition exists ("no"), then there is a return to block 300; however, if a quasi-static driving condition exists ("yes"), then variable mz*hz (i.e., product of the payload and its distance to the roll axis) is subsequently formed in block 303. (P. 13, l. 14-15). In block 304, it is subsequently checked whether mass mz of the payload is known (e.g., ascertained using compression-travel sensors). (P. 13, l. 16-18).

If mz is not known ("no"), then a "pessimistic" estimate for hz is subsequently ascertained in block 305 ("worst-case instance"): The "pessimistic estimate" means that a relatively large value is assumed for hz, in the case of a passenger car, for example, a roof load where hz ≈ 1.2m. (P. 13, l. 19-22). Following that, in block 306, variable mzminroll is calculated (value mz*hz from block 303 is divided by the value of hz from block 305), and from that, the value of hs is subsequently ascertained in block 307. (P. 13, l. 22-25).

On the other hand, if mz is known (query result "yes" in block 304), then subsequently in block 308, for safety reasons, this ascertained value of mz is slightly reduced again in order to compensate for possible measurement uncertainties; this reduced value is designated by mzmintotal. (P. 13, l. 27-30). Center-of-gravity height hznew of the payload is subsequently calculated in block 309, and from that, the total center-of-gravity height is calculated in block 310. (P. 13, l. 30-32).

VI. GROUNDS OF REJECTION TO BE REVIEWED

The following grounds of rejection are presented for review on appeal in this case:

(A) Whether claims 1-3, 6-7 and 10-11 are rendered obvious under 35 U.S.C. § 103(a) by U.S. Patent 5,825,284 ("Dunwoody") in view of U.S. Patent

Application No. 2003/0236603 ("Lu").

(B) Whether claim 4 is rendered obvious under 35 U.S.C. § 103(a) by Dunwoody in view of Lu, and further in view of U.S. Patent Application No. 2003/0065430 ("Lu '430").

(C) Whether claim 5 is rendered obvious under 35 U.S.C. § 103(a) over Dunwoody in view of Lu, and further in view of U.S. Patent Application No. 2002/0109310 ("Lim") and the website "Center of Gravity" (www-admin).

(D) Whether claim 8 is rendered obvious under 35 U.S.C. § 103(a) over Dunwoody in view of Lu, and further in view of U.S. Patent No. 6,502,023 ("Fukada").

VII. GROUPING OF CLAIMS

For each ground of rejection, all claims subject to the rejection will be argued as a single group, except for the rejection of claims 1-3, 6-7 and 10-11, for which rejection claims 7 and 10 will be argued independently.

VIII. ARGUMENTS

A. Rejection of Claims 1-3, 6-7 and 10-11 (35 U.S.C. § 103(a))

Claims 1-3, 6-7 and 10-11 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,825,284 ("Dunwoody") in view of U.S. Patent Application No. 2003/0236603 ("Lu"). Applicants submit that the rejection should be withdrawn for at least the following reasons.

1. Claims 1-3, 6 and 11

In rejecting a claim under 35 U.S.C. § 103(a), the Office bears the initial burden of presenting a prima facie case of obviousness. In re Rijckaert, 9 F.3d 1531, 1532, 28 U.S.P.Q.2d 1955, 1956 (Fed. Cir. 1993). To establish prima facie obviousness, three criteria must be satisfied. First, there must be some suggestion or motivation to modify or combine the reference teachings. In re Fine, 837 F.2d 1071, 5 U.S.P.Q.2d 1596 (Fed. Cir. 1988). The prior art must suggest combining the features in the manner contemplated by the claim. See Northern Telecom, Inc. v. Datapoint Corp., 908 F.2d 931, 934 (Fed. Cir. 1990), cert. denied, 111 S. Ct. 296; In re Bond, 910 F.2d 831, 834 (Fed. Cir. 1990). This teaching or suggestion to make the claimed combination must be found in the prior art and not based on the application disclosure. In re Vaeck, 947 F.2d 488, 20 U.S.P.Q.2d 1438 (Fed. Cir. 1991). Second, there must be a reasonable expectation of success. In re Merck & Co., Inc., 800 F.2d 1091, 231 U.S.P.Q. 375 (Fed. Cir. 1986). Third, the prior art reference(s) must teach or suggest all of the claim features. In re Royka, 490 F.2d 981, 180 U.S.P.Q. 580 (C.C.P.A. 1974).

Claim 1 recites, in relevant parts, "ascertaining the center-of-gravity height as a function of the variable representing the rolling motion and the variable representing the lateral acceleration, the center-of-gravity height being ascertained only in predefined driving conditions, the predefined driving conditions being a function of a change in a roll rate per unit of time." Claim 11 recites substantially similar limitations.

Dunwoody discloses a system and method for detecting vehicle rollover conditions, where the rollover condition is identified on the basis of two parameters: The lateral load transfer (LLT) and the center of gravity height. Lu discloses a system for sensing vehicle attitudes, including global and relative attitudes, using suspension height sensors.

In support of the rejection, the Examiner concedes that Dunwoody does not disclose ascertaining the center of gravity height only according to a function of a change in the roll rate, but the Examiner contends that the combination of Dunwoody and Lu would teach the claimed features, for the following reasons:

1. Dunwoody teaches ascertaining the center of gravity height only when the lateral acceleration is above a predetermined threshold;
2. Dunwoody suggests that ascertaining the center of gravity when there is a

rolling of the vehicle frame can result in minor error;

3. therefore, to define the second driving condition when the vehicle frame is not rolling in ascertaining the center of gravity to eliminate minor error would have been obvious; and
4. Lu teaches that the change of roll rate could be determined by the lateral acceleration.

As an initial matter, Applicants note that Lu does not teach that the change of roll rate could be determined by the lateral acceleration. Rather, Lu teaches determining the change of roll rate from the longitudinal acceleration. Applicants point to Equation (6) in Lu (paragraph 0044), in which the change of longitudinal roll rate is expressed as a function of the variable a_x. Applicants submit that a_x is not the lateral acceleration, but rather the longitudinal acceleration. Applicants point to Equation (4) in Lu (paragraph 0040), where the force F_x and the acceleration a_x are related. Figure 1 of Lu clearly shows that the x axis in the frame of reference is the axis longitudinal to the vehicle.

In the Advisory Action of 5/5/05, the Examiner contends the following: "Concerning the Lu's teaching, normally, the roll angle and the lateral acceleration should be defined in the y axis," and "according to paragraph 0020, the roll rate (when defined in the y axis of the coordinate) is called by Lu as the pitch rate wy (since this variable is determined in the y axis), and the pitch rate (which should be read as the roll rate) is determined as a function of the lateral acceleration ay (equation 6)." First, the Examiner cannot simply make up what the actual disclosure of an applied reference should be, i.e., the Examiner cannot simply assert that "normally, the roll angle and the lateral acceleration should be defined in the y axis." It is absolutely clear that the roll rate ω_x of Lu is defined about the longitudinal x axis pointing forward. (Parag. 0020; Fig. 1). In addition, to the extent the Examiner is contending that the definition of "roll rate" used by the Applicants is based on a coordinate system (relative to the car body orientation) that is different from the coordinate system used to define "roll rate" as used in Lu, this contention is clearly false: both Applicants and Lu define "roll rate" about the longitudinal x-axis. (See Applicants' claim 1 and specification p. 5, l. 6-13; Lu parag. 0020). Accordingly, there is simply no merit to the Examiner's conclusion that "Lu's teaching just enforces the fact that the lateral acceleration can be replaced by the roll rate."

With respect to the Examiner's contentions 1-3 listed above regarding the disclosure of Dunwoody, Applicants submit that Dunwoody's suggestions relating to when to ascertain the center of gravity height are at best contradictory. The Examiner contention 1), i.e., Dunwoody teaches ascertaining the center of gravity height ***only when*** the lateral acceleration is above a predetermined threshold, is clearly contradictory to the Examiner's contentions 2) and 3) noted above, i.e., Dunwoody suggests ascertaining the center of gravity ***when the vehicle frame is not rolling*** to avoid errors. Given that in some driving conditions a lateral acceleration will be associated with a rolling motion, Applicants submit that the teaching of Dunwoody is far from being unambiguous, and that therefore Dunwoody does not teach or suggest ***ascertaining*** the center of gravity height ***only according to a function of a change in the roll rate***.

In the Advisory Action of 5/5/05, the Examiner contends that "Dunwoody teaches ascertaining the center of gravity h_{cgv} as a function of LTR, the LTR is, in turn, determined as a function of M (equation (6) and (4)), and M is in turn determined as a function of the roll rate db/dt, therefore when the roll rate db/dt is changed, the center of gravity in equation (7) is ***changed*** (or is ***ascertained***)." To the extent the examiner is contending that the claimed term "ascertained" means "changed," this interpretation is completely incorrect, both factually and legally. Initially, Applicants note that the broadest reasonable interpretation of the claims must be consistent with the *interpretation that those skilled in the art would reach.* MPEP §2111. It is simply unreasonable to suggest that one of ordinary skill in the art would interpret the claimed term "ascertained" to mean "changed," rather than meaning "calculated" or "determined." Furthermore, even if one applied the Federal Circuit cases most favorable to the Examiner's position, even if the ordinary and customary meaning of a claim term to persons skilled in the pertinent art is evident, "the inventor's written description of the invention, for example, is relevant and controlling insofar as it provides clear lexicography or disavowal of the ordinary meaning." C. R. Bard Inc. v. United States Surgical Corp., 73 U.S.P.Q.2 d 1011, 1014 (Fed. Cir. 2004). This rule is clearly consistent with the long-standing rules that "Applicant may be his or her own lexicographer as long as the meaning assigned to the term is not repugnant to the term's well known usage." MPEP 2111. In the present case, Applicants' written description regarding the claimed term "ascertained" is entirely consistent with the ordinary and customary meaning, i.e., "ascertained" means "calculated" or "determined," **not** merely "changed." (See, e.g., Specification, p. 12, l. 14-28). Accordingly, there is no merit to the Examiner's contention that the claimed term "ascertained" merely means "changed."

The Examiner further contends that "Dunwoody's teaching is sufficient to show that the change in the roll rate db/dt effect the change of variable LTR and therefore effects the change in the center of gravity." Even if one assumes hypothetically for the sake of argument that the above-quoted contentions of the Examiner are correct, i.e., a change in the roll rate affects the center of gravity height, the Examiner's contentions (and the asserted teachings of Dunwoody) simply fail to show that the **decision to calculate the center-of-gravity height is dependent on predetermined driving conditions which are a function of a change in a roll rate**.

Independent of the above, even assuming, arguendo, that Lu showed that the change of roll rate could be found from Equation (6) of Lu as a function of the lateral acceleration,.Lu certainly does not provide an expression for the lateral acceleration as a function of the change of roll rate. Without such an expression, it would be impossible to use the teaching of Dunwoody to ascertain the center of gravity height only according to a function of a change in the roll rate. It is well known that a function of many variables y = f (x1, x2, ...) cannot be inverted under general conditions to uniquely yield one of the variables x1, x2, ... as a function of the remaining variables and of y. Applicants submit that the inversion of Equation (6) of Lu is not taught or even suggested by Lu or by any other reference cited by the Examiner, nor would it be obvious to a person with ordinary skills in the art. Although the Examiner contends in the Advisory Action that "inverting the function concerning several variables would have been obvious," Applicants note that this assertion is an incorrect and unsupported conclusion based on the Examiner's personal opinion, and Applicants reiterate that a function of many variables y = f (x1, x2, ...) cannot be inverted under general conditions **to uniquely yield one of the variables** x1, x2, ... **as a function of the remaining variables and of y**.

Independent of the above, Applicants submit that a person skilled in the art would have no reason to combine the teachings of Lu and Dunwoody. A prima facie finding of obviousness requires a suggestion to combine the references that is "clear and particular." In re Dembiczak, 50 U.S.P.Q.2d 1614 (Fed. Cir. 1999). Applicants submit that Dunwoody does not discuss the problem of computing a lateral acceleration, and Lu does not discuss the problem of ascertaining a center-of-gravity height. Therefore, Applicants submit that, when the applied references are viewed in their entirety, there is no "clear and particular" suggestion to combine the applied references.

For at least the foregoing reasons, Applicants submit that claims 1 and 11, as well as dependent claims 2-3 and 6, are allowable over the combination of Dunwoody and Lu, and the rejection of claims 1, 2-3, 6 and 11 should be reversed.

2. Claim 7

Claim 7 ultimately depends from claim 1, and therefore the foregoing arguments presented in connection with claim 1 apply equally to dependent claim 7.

Independent of the above, regarding Claim 7, Applicants respectfully submit that neither Dunwoody nor Lu teaches or suggests ascertaining the center-of-gravity height only in "driving conditions in which an amount of the change in the roll rate per unit of time is less than a factor multiplied by an amount of the variable representing the lateral acceleration." Applicants respectfully submit that the Examiner is unreasonably extrapolating a general remark by Dunwoody that "the rolling of the vehicle frame may cause minor inaccuracy" into a detailed mathematical formula. Applicants note that Dunwoody merely mentions the "rolling of the vehicle frame" and not the "change in the roll rate per unit of time" which is a specific physical quantity. Applicants submit that it is simply unreasonable to suggest that one of ordinary skills in the art would interpret the "rolling of the vehicle frame" to mean "change in the roll rate per unit of time."

Independent of the above, also regarding Claim 7, Applicants note that Dunwoody suggests that "errors [due to rolling] are considered minimal and may be disregarded." (Col.10, lines 29-30). Therefore, Dunwoody actually suggests that the center of gravity can be accurately computed in the presence of a rolling of the vehicle frame, thus contradicting the Examiner's reading of the teachings of Dunwoody. A prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention. W.L. Gore & Associates, Inc. v. Garlock, Inc., 721 F.2d 1540, 220 U.S.P.Q. 303 (Fed. Cir. 1983). If anything, Dunwoody teaches away from the presently claimed subject matter, by suggesting that **errors due to rolling can be disregarded**.

For at least the foregoing reasons, Applicants submit that claim 7 is allowable over the combination of Dunwoody and Lu, and the rejection of claim 7 should be reversed.

3. Claim 10

Claim 10 depends from claim 1, and therefore the foregoing arguments presented in connection with claim 1 apply equally to dependent claim 10.

Independent of the above, regarding Claim 10, it is alleged in the Office Action mailed on February 28, 2005 that "[e]stimating the truck mass using the manufacturer's specification instead of physically weighting the truck would have been both well known and obvious use when the truck mass element is needed and the exact weight is not extremely crucial." (Office Action, page 7). Since it appears the Examiner is relying on personal knowledge, Applicants traverse the Official Notice and respectfully request that the Examiner cite a reference or provide an affidavit in support of the rejection. (See MPEP § 2144.03). Although the Examiner contends in the Advisory Action that Applicants do not challenge the official notice, and therefore "the limitation addressed under claim 10 is taken as admitted prior arts," as well as noting that Applicants do not adequately challenge the official notice because Applicants do not specifically point out the supposed errors (including why the noticed fact is not considered to be common knowledge), these contentions are simply incorrect. First, the notion that Applicants did not challenge the official notice (and therefore admitted the limitations of claim 10 as prior art) is completely nonsense in view of the Applicants' statement that "Applicants traverse the Official Notice." (4/20/05 Amendment, p. 8). To the extent the Examiner is contending that Applicants' challenge to the official notice is inadequate, Applicants note that the very fact the Examiner has not been able to produce any documentary evidence to support the "common knowledge" assertion clearly supports the notion that the limitation of claim 10 is not "common knowledge," and Applicants are certainly not aware of any documentary evidence to support the Examiner's position. In any case, "[o]rdinarily, there must be some form of evidence in the record to support an assertion of common knowledge," (MPEP 2144.03B), and the Examiner has not produced any evidence.

For at least the foregoing reasons, Applicants submit that claim10 is allowable over Dunwoody and LU, and Applicants respectfully submit that the rejection of claim 10 should be reversed.

B. Rejection of Claim 4 (35 U.S.C. § 103(a))

Claim 4 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Dunwoody in view of Lu, and further in view of U.S. Patent

Appl. No. 2003/0065430 (Lu '430). Applicants submit that the rejection should be reversed for at least the following reasons.

Claim 4 depends from claim 2. Since claim 2 has been shown to be allowable, its dependent claim 4 is similarly allowable. Independently, claim 4 recites the feature that "by an integration of the roll rate over time, ascertaining the roll angle." Lu generally describes a simple integration of the roll rate to predict the vehicle roll attitude angle (paragraph 49). However, a prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention. W.L. Gore & Associates, Inc. v. Garlock, Inc., 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983). Lu '430 ***discourages*** the use of such integrations to determine the roll angle (paragraph 50). Therefore, Applicants submit that a person with ordinary skills in the art would not look to Lu '430 to determine the roll angle. Although the Examiner contends that "the fact that Lu does not use the integration does not mean this roll angle cannot be determined from the known roll rate," the Examiner is ignoring the fact that Lu '430 ***affirmatively discourages*** use of such integrations to determine the roll angle, which teaching is completely independent of whether integration may or may not be used, and which teaching cannot be selectively ignored by the Examiner.

In view of the foregoing, Applicant submits that claim 4 is allowable over the applied references, and Applicants respectfully submit that the rejection of claim 4 should be reversed.

C. Rejection of Claim 5 (35 U.S.C. § 103(a))

Claim 5 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Dunwoody in view of Lu, and further in view of U.S. Patent Appl. No. 2002/0109310 (Lim) and the website "Center of Gravity" (www-admin). Applicants submit that the rejection should be reversed for at least the following reasons.

Claim 5 depends from claim 1. Since claim 1 has been shown to be allowable, its dependent claim 5 is similarly allowable. Independently, claim 5 recites "ascertaining a product of a mass of a payload of the vehicle and a center-of-gravity height of the payload" to ascertain "the center-of-gravity height." Applicants submit that this limitation is not taught or suggested by Lim; rather, Lim merely teaches that "the position of the center of gravity can be mathematically determined from the mass of the individual elements of the vehicle along with the location and mass of the vehicle cargo and passengers." (Parag. 0043). The latter is a statement of fact that may be found in any physics textbook, as well as in the www-admin reference cited by the Examiner: The center of gravity is the weighted average of the positions of all elements of a system. However, nowhere in any of the references cited by the Examiner is it taught or suggested that a product of a mass of a payload of the vehicle and a center-of-gravity height of the payload is ascertained in order to ascertain a center-of-gravity height. Lim and www-admin merely state universally known laws of physics, which laws the presently claimed subject matter certainly obeys. On the other hand, the application of these laws to arrive at the subject matter of claim 5 is clearly the result of hindsight reconstruction by the Examiner.

The Examiner's further contentions presented in the Advisory Action, i.e., that "ascertaining the center of gravity include[s] ascertaining the function of the mass and payload," simply does not address that a product of a mass of a payload of the vehicle and a center-of-gravity height of the payload is ascertained in order to ascertain a center-of-gravity height.

In view of the foregoing remarks, Applicant submits that Claim 5 is allowable over the applied references, and Applicants respectfully request reversal of the rejection of claim 5.

D. **Rejection of Claim 8 (35 U.S.C. § 103(a))**

Claim 8 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Dunwoody in view of Lu, and further in view of U.S. Patent

No. 6,502,023 (Fukada). Applicants submit that the rejection should be reversed for at least the following reasons.

Claim 8 depends from claim 1. Since claim 1 has been shown to be allowable, its dependent claim 8 is similarly allowable. Independently, in order to render a claim obvious based on a combination of references, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine the reference teachings. See M.P.E.P. § 2143.01. Claim 8 recites "ascertaining whether a road surface has a gradient in a vehicle transverse direction, the center-of-gravity height being ascertained only in the case of a roadway which is one of (a) not inclined and (b) only negligibly inclined in the vehicle transverse direction." Fukada generally describes a device for estimating a rolling condition of a vehicle body. Fukada discusses examining the angle θ of lateral inclination of the road surface to check whether this inclination may cause a substantial error in estimating the lateral acceleration (col.6, lines 18-20).

Applicants respectfully submit that a determination of the center of gravity may use the lateral acceleration as only one of the elements, but it would not be obvious to a person skilled in the art to blindly adopt a criterion that was disclosed in Fukada for the accurate determination of the lateral acceleration, as a criterion for ascertaining of the center-of-gravity height. Applicants note that Fukada does not address at all the problem of the determination of a center-of-gravity height. Applicants submit that the Examiner is applying improper hindsight reconstruction to read the subject matter of claim 8 in the teaching of Fukada.

For at least the foregoing reasons, Applicants submit that claim 8 is allowable over the applied references, and Applicants respectfully request that the rejection of claim 8 be reversed.

IX. CONCLUSION

For the foregoing reasons, it is respectfully submitted that the final rejection of claims 1-8 and 10-11 should be reversed.

Respectfully submitted,

KENYON & KENYON

(R. No. 36,197)

Dated: September 29, 2005

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[10191/3387]

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BOARD OF PATENT APPEALS AND INTERFERENCES

Applicants : Armin VERHAGEN et al.
Application. No. : 10/681,994
Filed : October 8, 2003
For : METHOD AND DEVICE FOR ASCERTAINING THE CENTER-OF-GRAVITY HEIGHT OF A VEHICLE
Art Unit : 3661
Examiner : Thu V. NGUYEN
Conf. No. : 8950

Mail Stop Appeal Brief-Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Mail Stop Appeal Brief-Patents, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on

Date: September 29, 2005 Reg. No. 36,197

Signature: ______________
Jong H. Lee

APPENDIX TO APPELLANTS' APPEAL BRIEF UNDER 37 C.F.R. § 41.37

SIR:

The claims involved in this appeal, claims 1-8 and 10-11, in their current form after entry of all amendments presented during the course of prosecution, are set forth below:

I. CLAIMS APPENDIX:

1. A method for ascertaining a center-of-gravity height of a motor vehicle, comprising:

ascertaining a variable representing a rolling motion of the vehicle about its roll axis oriented in a vehicle longitudinal direction;

ascertaining a variable representing a lateral acceleration of the vehicle; and

ascertaining the center-of-gravity height as a function of the variable representing the rolling motion and the variable representing the lateral acceleration, the center-of-gravity height being ascertained only in predefined driving conditions, the predefined driving conditions being a function of a change in a roll rate per unit of time.

2. The method according to claim 1, wherein the variable representing the rolling motion is the roll rate, the roll rate being a change in a roll angle per unit of time.

3. The method according to claim 1, wherein the variable representing the rolling motion is a roll angle.

4. The method according to claim 2, further comprising ascertaining the roll rate and, by an integration of the roll rate over time, ascertaining the roll angle, the center-of-gravity height being ascertained as a further function of the roll angle.

5. The method according to claim 1, wherein the ascertaining of the center-of-gravity height includes ascertaining a product of a mass of a payload of the vehicle and a center-of-gravity height of the payload.

6. The method according to claim 1, further comprising ascertaining the predefined driving conditions as a further function of the variable representing the lateral acceleration.

7. The method according to claim 6, wherein the center-of-gravity height is ascertained only in those driving conditions in which an amount of the change

in the roll rate per unit of time is less than a factor multiplied by an amount of the variable representing the lateral acceleration.

8. The method according to claim 1, further comprising ascertaining whether a road surface has a gradient in a vehicle transverse direction, the center-of-gravity height being ascertained only in the case of a roadway which is one of (a) not inclined and (b) only negligibly inclined in the vehicle transverse direction.

10. The method according to claim 1, wherein the center-of-gravity height is ascertained as a further function of an estimated mass of the vehicle.

11. A device for ascertaining a center-of-gravity height of a motor vehicle, comprising:

first sensor means for ascertaining a variable representing a rolling motion of the vehicle about its roll axis oriented in a vehicle longitudinal direction;

second sensor means for ascertaining a variable representing a lateral acceleration of the vehicle; and

ascertainment means for ascertaining the center-of-gravity height as a function of the variable representing the rolling motion and the variable representing the lateral acceleration, the center-of-gravity height being ascertained only in predefined driving conditions, the predefined driving conditions being a function of a change in a roll rate per unit of time.

II. EVIDENCE APPENDIX

In the present application, there has been no evidence submitted pursuant to 37 C.F.R. §§ 1.130, 1.131 or 1.131, or other evidence entered by the Examiner and relied upon by Appellants in the present appeal.

II. RELATED PROCEEDINGS APPENDIX

No appeal or interference which will directly affect, or be directly affected by, or have a bearing on, the Board's decision in the pending appeal is known to exist.

Respectfully submitted,

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(R. No. 36,197)

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